

**Doppelkettenstich Knopflochautomat
Einfachkettenstich Schnürlochautomat
Automatic double-chainstitch buttonholer
Automatic single-chainstitch eyelet machine**

Bedienanleitung / [Operating Instructions](#)

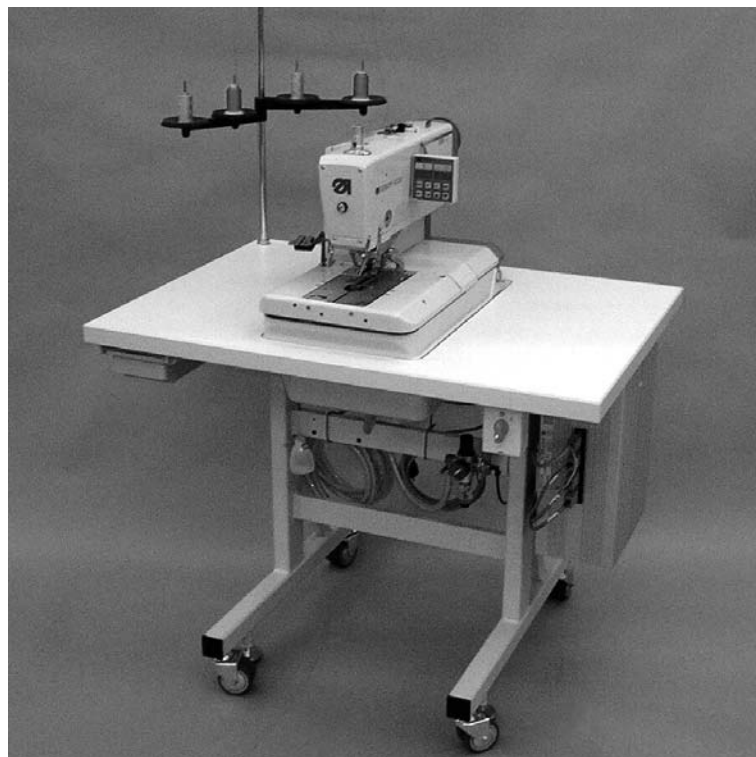
Aufstellanleitung / Installation Instructions

Serviceanleitung / Service Instructions

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2

3



559

Manual, complete

Summary		
Operating Instructions Installation Instructions Service Instructions		
<u>Interconnection-diagram</u> 9890 580001 B		
<u>Pneumatic circuit plan</u> 9770 559001		

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Foreword

This instruction manual is intended to help the user to become familiar with the machine and take advantage of its application possibilities in accordance with the recommendations.

The instruction manual contains important information on how to operate the machine securely, properly and economically. Observation of the instructions eliminates danger, reduces costs for repair and down-times, and increases the reliability and life of the machine.

The instruction manual is intended to complement existing national accident prevention and environment protection regulations.

The instruction manual must always be available at the machine/sewing unit.

The instruction manual must be read and applied by any person that is authorized to work on the machine/sewing unit. This means:

- Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste,
- Service (maintenance, inspection, repair) and/or
- Transport.

The user also has to assure that only authorized personnel work on the machine.

The user is obliged to check the machine at least once per shift for apparent damages and to immediately report any changes (including the performance in service), which impair the safety.

The user company must ensure that the machine is only operated in perfect working order.

Never remove or disable any safety devices.

If safety devices need to be removed for equipping, repairing or maintaining, the safety devices must be remounted directly after completion of the maintenance and repair work.

Unauthorized modification of the machine rules out liability of the manufacturer for damage resulting from this.

Observe all safety and danger recommendations on the machine/unit! The yellow-and-black striped surfaces designate permanent danger areas, eg danger of squashing, cutting, shearing or collision.

Besides the recommendations in this instruction manual also observe the general safety and accident prevention regulations!

General safety instructions

The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.

1. The machine must only be commissioned in full knowledge of the instruction book and operated by persons with appropriate training.
2. Before putting into service also read the safety rules and instructions of the motor supplier.
3. The machine must be used only for the purpose intended. Use of the machine without the safety devices is not permitted. Observe all the relevant safety regulations.
4. When gauge parts are exchanged (e.g. needle, presser foot, needle plate, feed dog and bobbin) when threading, when the workplace is left, and during service work, the machine must be disconnected from the mains by switching off the master switch or disconnecting the mains plug.
5. Daily servicing work must be carried out only by appropriately trained persons.
6. Repairs, conversion and special maintenance work must only be carried out by technicians or persons with appropriate training.
7. For service or repair work on pneumatic systems, disconnect the machine from the compressed air supply system (max. 7-10 bar). Before disconnecting, reduce the pressure of the maintenance unit. Exceptions to this are only adjustments and functions checks made by appropriately trained technicians.
8. Work on the electrical equipment must be carried out only by electricians or appropriately trained persons.
9. Work on parts and systems under electric current is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversion or changes to the machine must be authorized by us and made only in adherence to all safety regulations.
11. For repairs, only replacement parts approved by us must be used.
12. Commissioning of the sewing head is prohibited until such time as the entire sewing unit is found to comply with EC directives.
13. The line cord should be equipped with a country-specific mains plug. This work must be carried out by appropriately trained technicians (see paragraph 8).



It is absolutely necessary to respect the safety instructions marked by these signs.

Danger of bodily injuries !

Please note also the general safety instructions.



Preface and general safety hints

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1. Description of product

1.1 Use in accordance with the requirements

The **DÜRKOPP ADLER 559** is a sewing automat determined for sewing buttonholes in light to medium-weight material, i.e. fabrics made of textile or synthetic fibres.

Such sewing materials are used in the clothing industry. Furthermore, this sewing automat can possibly also sew so-called technical seams. However, in this case the user has to estimate the possible risks (preferably in cooperation with DÜRKOPP ADLER) because on the one hand such fields of application are comparatively rare and on the other hand there is an immense variety of possibilities. According to the result of this estimation suitable safety measures are to be taken. Generally only dry fabrics must be processed with this machine. The material must not be thicker than **8 mm** when compressed by the lowered upper fabric clamps.

It must not include any hard objects. When working with the sewing automat the operator must wear a **finger and eye protection**. The sewing automat must be installed and operated in dry and well-kept rooms only. If it is operated in other rooms, which are not dry and well-kept, further measures can become necessary which have to be agreed upon (see EN 60204-31:1999). We as manufacturers of industrial sewing machines take it for granted that at least semi-skilled operators are working with our products so that we can assume that all usual operations and their risks are known to them.

1

1.2 Brief description

The **DÜRKOPP ADLER 559** is an automatic double-chainstitch buttonholer or a single-chainstitch automat for stitched eyelets with CNC step motor technology for the material feed and the rotation of the sewing mechanism. The automatic buttonholer works with two chainstitch loopers the left of which is thread-guiding. For sewing of buttonholes with or without eyelet, with taper tack, round tack, cross tack or without bartacks. The automat is equipped with a needle thread trimmer and an electronically regulated needle thread tension.

Technical features

The automat is driven by a positioning drive integrated in the machine arm.

The drive for the motion of the axes X, Y and Z is effected via one step motor each. These drives are controlled via an electronic control in conjunction with various pneumatic machine functions.

The control panel is fitted on the machine arm in such a way that the operator has a good view on it and that it is easily accessible. This drive and control system offers the following advantages:

- Variable sewing speed according to the sewing parameters (e.g. needle thread, looper thread, material, seam width) up to 2200 stitches/min. max.
- Quiet running (no mechanical switching on and off). Additional noise reduction by optimized needle bar and looper drive.
- The use of step motors allows a very variable field of application. Control cams are not used.
- The control panel with 8-digit LED display and membrane keyboard is fitted on the right of the sewing head within easy reach of the operator.
- The following functions are operated via push button:
 - Closing and opening the clamp
 - Activating the sewing operation
 - Quick stop with needle position “up”

- Pneumatic cutting open of the buttonhole.
- Automatic adaptation of the cutting power of the buttonhole knife dependent on the programmed buttonhole length.
- Due to the vertically working cutting block support no follow-up work required in case of different cutting block heights.
- Central oil wick lubrication from two oil reservoirs.
- Switch at the head cover for moving to the ideal position for threading in.
- Electronically controlled needle thread tension.
- In case of needle thread breakage the needle thread monitor interrupts the sewing cycle, the fabric clamps remain closed and hold the workpiece which can be removed at the touch of a button.
- Covered, smooth design. The swivelling up of the automat is supported by a gas-pressurized spring which also helps that the machine head is swivelled back slowly.

Control

- A counter of the number of buttonholes sewn is shown in the display.
- 5 programmable buttonholes can be memorized.
- Integrated test and monitoring system "Multitest". Apart from the monitoring of the sewing process this allows a rapid test of the input and output elements as well as of the motor functions without additional measuring instruments.
- Electronic alteration of the throw width in lip and eyelet.
- By means of a setting provision in the display it is made possible that the fabric support plate moves to the initial position of the next buttonhole after releasing the workpiece. This means a better view when loading the workpiece.
- According to the buttonhole type the following parameters can be set at the control panel:
 - with or without eyelet
 - max. speed 2200 min⁻¹
 - buttonhole length
 - cutting before or after sewing
 - without cutting open
 - number of stitches in the eyelet
 - stitch distance
 - taper tack length

1.3 Subclasses

559-151000 With trimmer for the needle thread cut short. For cutting lengths up to 42 mm. Universal machine for buttonholes in fabrics of different quality and size; according to the sewing equipment with or without lower gimp alternatively.

1.4 Structure of product

		Subclasses			
		559-151000			
Equipment	Material number				
Sewing automat	0559 990001	X			
Accessories	0791 580501	X			
Optional equipment:					
Pneumatic connection package	0797 0030031	O			
Integral sewing lamp (LED)	0580 100344	O			
Foot switch	9880 580002	O			
Upper gimp guide	0580 590804	O			
Fabric deflector for back trousers	0580 590574	O			
Support table for operating while standing	0580 590504	O			
Positioning aids					
Spacer for the distance from buttonhole to buttonhole (R+L)	0580 590394	O			
Spacer (R+L) for the distance between buttonhole and fabric edge	0580 590404	X			
Laser marking lamp	0580 590564	O			
Slide-on table for vertical positioning	0580 590604	O			
Kit for vertical positioning (left and right clamping plate)	0580 590554	O			
Stands					
MG58-13 (normal installation) Stand with fastening parts and table top 1060x750 incl. maintenance unit and rollers	MG58 400104	O			
MG58-13 (normal installation, narrow stand) Stand with fastening parts and table top 620x750 incl. maintenance unit and rollers	MG58 400124	O			
MG58-13 (vertical positioning, narrow stand) Stand with fastening parts and table top 1060 x 600 incl. maintenance unit and rollers	MG58 400114	O			

X = Standard equipment

O = Equipment as per request

2. Technical data

Machine head:	Class 559
Type of sewing stitch:	Double-chainstitch
Number of needles:	1
Needle system:	558 / 579



Attention!

When changing over from one needle system to the other the distance between looper and needle and the adjustment of the needle protection have to be checked in any case (see service instructions).

Max. needle size:	Nm 80-120 (558) / Nm 90-125 (579)
Needle thread size:	max. Nm 50
Looper thread size:	max. Nm 30
Max. Speed:	2200 min ⁻¹
Stitch distance:	0,5 - 2 mm
Max. sewing length:	50 mm (depending on the sewing equipment)

Max. cutting length: 50 mm
(depending on the sewing equipment)

Operating pressure:	6 bar $\pm$ 0,5 bar
Air consumption:	approx. 3 NL per working cycle

Rated load:	320 VA
Rated voltage:	1 x 190-240 V, 50/60 Hz

Dimensions:	Machine head: 550 x 370 x 580 (L x B x H) Table top (standard installation): 1060 x 750 x 1150 mm (L x W x H) Table top (narrow stand): 620 x 850 x 1150 mm (L x W x H)
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Working height:	730-900 mm (upper edge of the table top) upper edge of the machine table: 830-1000 mm
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Weight with stand:	approx. 160 kg
Weight of head:	approx. 100 kg
Weight of control:	approx. 12 kg

Rated noise value: Lc = 77 dB (A)

Workplace-related emission value in accordance with DIN 45635-48-B-1 (sewing cycle 4,2 s ON and 1,0 s OFF)

Stitch distance:	1,2 mm
Speed:	2200 rpm
Buttonhole length:	24 mm
Material:	double denim 509g/m ²

3. Operation

3.1 Needles, threads and gimps

Needles

Needle system:

558 / 579

Needle sizes:

Nm 80-120 (558) / Nm 90-125 (579)
according to the type of sewing thread,
fabric and sewing equipment (E-No.).



Attention!

When changing over from one needle system to the other the distance between looper and needle and the adjustment of the needle protection have to be checked in any case (see service instructions).

Threads

The look of the buttonhole is essentially influenced by the used sewing thread.

Threads of synthetic fibre or even silk threads can be used as needle and looper threads.

The look of the buttonhole is essentially influenced by

- the used thread.
- the use of different needle and looper thread sizes.

Gimps

The gimp is meant to stabilize the buttonhole and to give it a relief-type appearance at the same time.

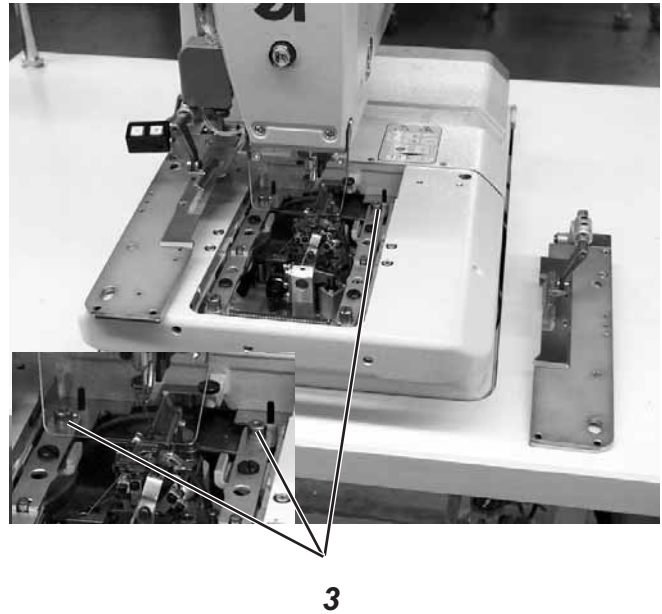
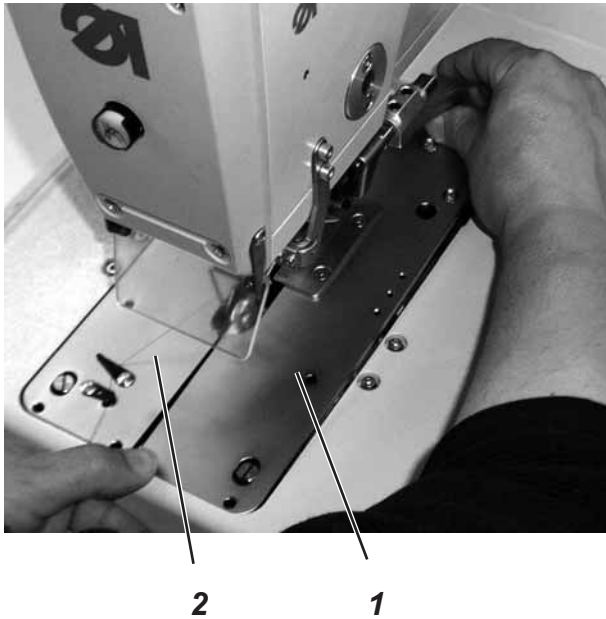
It should have the following features:

- not too thick, but supple and tight
- even thickness

The threads mentioned in the following table are recommendations only. Depending on the sewing equipment (E-No.) and the material also other threads and thread sizes may be required.

Subclass	Type and size of needle thread	Type and size of bottom thread	Type and size of lower gimp
559-151000	Poly-Poly 80/2	Poly-Poly 80/2	Poly-Schappe 15/3

3.2 Removing and inserting the clamping plates



Caution: Danger of injury !

The removing and inserting of the clamping plates 1 has to be done with the sewing automat switched off or in the position "Threading mode" (see chapter "Threading mode").

Remove the clamping plates

- Slightly lift the right clamping plate 1 at the back and pull it backwards.
Then remove the clamping plate sideways to the right.
- Slightly lift the left clamping plate 1 at the back and pull it backwards.
Then remove the clamping plate sideways to the left.

Insert the clamping plates

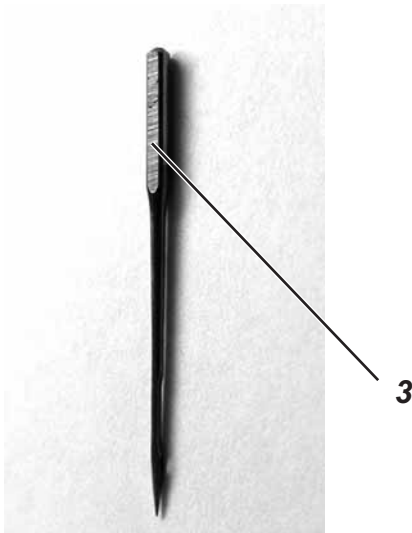
- Push the clamping plate to the front into the recess.
- Snap in the clamping plate in the pin 3.



Hint!

Wrongly inserted clamping plates can lead to damage or injuries.

3.3 Needle change



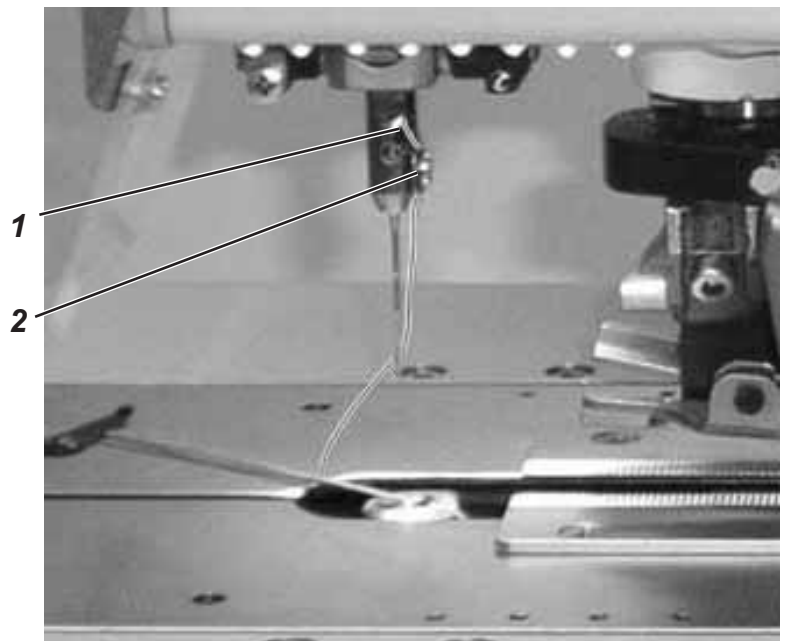
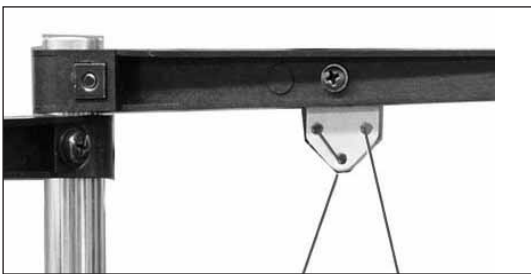
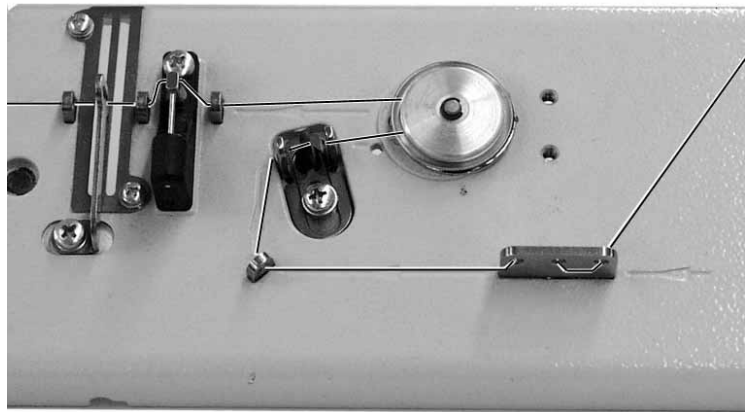
Caution: Danger of injury !

The needle has to be changed with the sewing automat switched off or in the position "Threading mode" (see chapter "Threading mode").

1

- Loosen screw 1 (Allen key in the accessories).
- Pull needle 2 out of the needle bar.
- Push the new needle into the hole of the needle bar as far as it will go.
- Align needle 2 in such a way that the hollow groove points to the front and the flat 3 at the needle butt to the left (towards the fastening screw 1). Only needle system 579 has got this flat 3 ! When using needle system 558 align the needle 2 in such a way that the hollow groove points to the front.
- Tighten screw 1.

3.4 Threading the needle thread

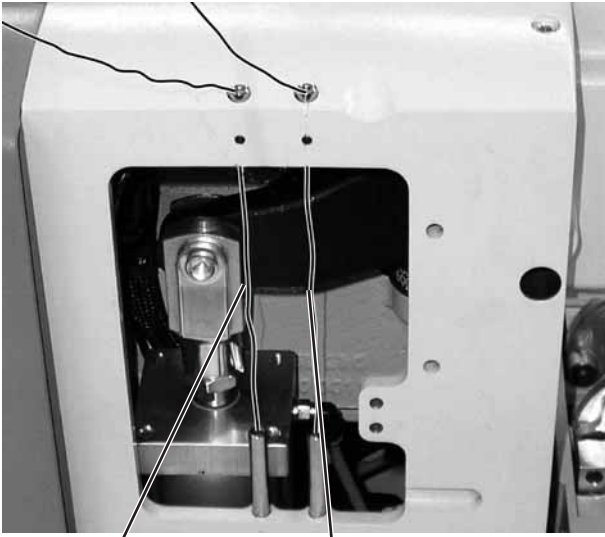


Caution: Danger of injury !

The needle thread must only be threaded in when the machine is switched off or in the "Threading mode" (see chapter "Threading mode").

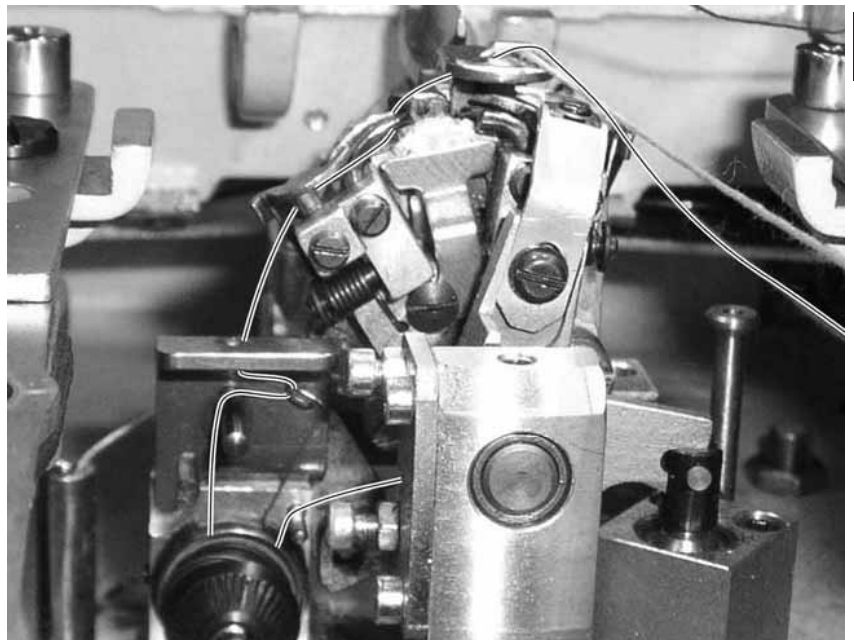
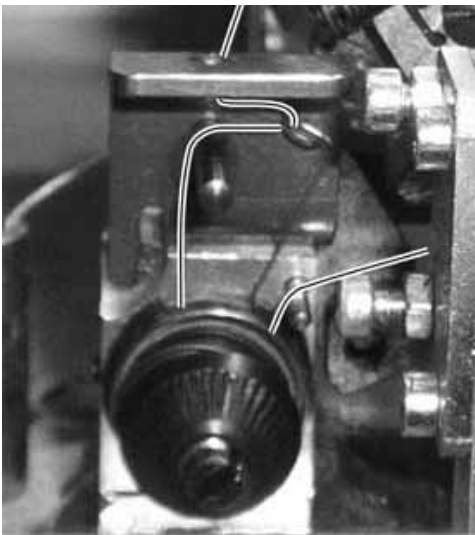
- Thread in the needle thread as shown in the illustrations.
- For threading in the needle thread push the threading in wire (in the accessories) through the hollow needle bar 1 from the bottom to the top.
- Lead the needle thread behind the looper.
- Pull the wire with the needle thread down.
- Lead the needle thread to the left behind the tension disc 2 and thread it in the needle from behind to the front.

3.5 Threading the looper thread



Looper thread

Gimp thread



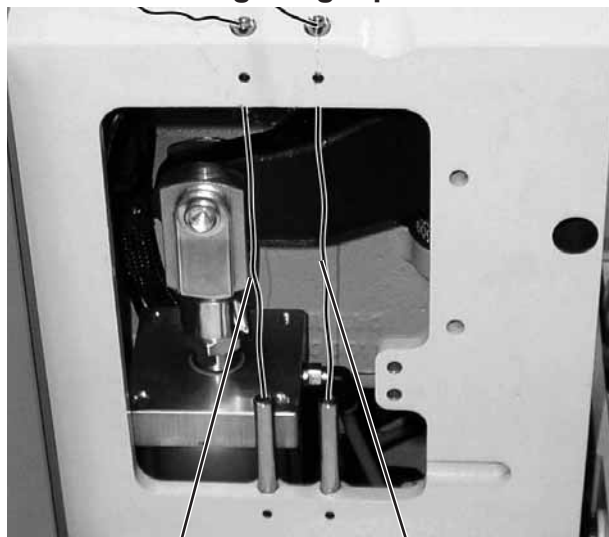
Caution: Danger of injury !

The looper thread must only be threaded in when the machine is switched off or in the "Threading mode" (see chapter "Threading mode").

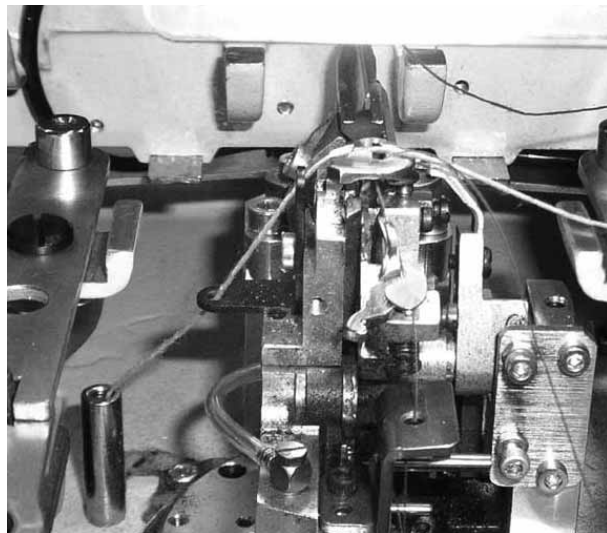
The automat must be in its final position, i.e. the looper turret with the loopers has to point to the front.

- Remove the clamping plates (see chapter 3.2).
- Swivel the automat upwards.
- Thread in the looper thread according to the illustrations with the help of the long threading in wire included in the accessories.
- Leave an approx. 25 mm long looper thread end hanging out of the needle hole of the throat plate.
- Insert the clamping plates (see chapter 3.2).

3.6 Threading the gimp thread



Bottom thread Gimp thread



The looper turret has been turned 90° counter clockwise in order to show clearly the thread guide of the gimp thread.



Caution: Danger of injury !

The gimp thread must only be threaded in when the sewing machine is switched off or in the "Threading mode" (see chapter "Threading mode").

- Thread in the gimp thread as shown in the illustrations.
- Leave an approx. 25 mm long gimp end hanging out of the gimp hole of the throat plate.

4. Swivelling the automat up and down



Caution: Danger of injury !

The automat must only be swivelled up when the machine is switched off or in the "Threading mode" (see chapter "Threading mode").



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For various operations (e.g. for threading the looper thread or the gimp thread) the automat has to be swivelled up.

Swivelling up:

- Pull the locking bolt 1 and lift the automat at the front.
- Let the locking bolt 1 go again and snap it in a drill-hole (maybe you have to swivel the automat up and down a little).
- You should not let the automat go before the locking bolt 1 has snapped in.

Swivelling down:

- Keep hold of the automat and pull the locking bolt 1.
- Swivel the automat down slowly.



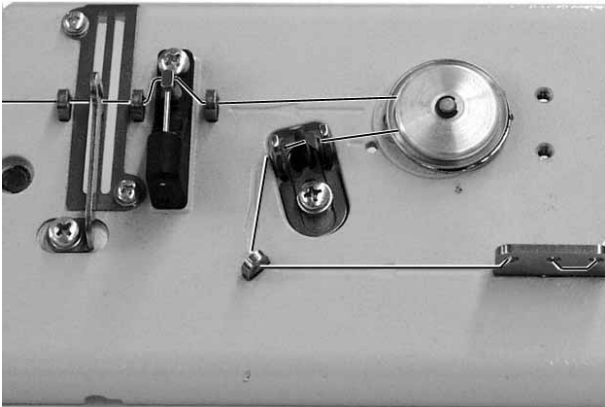
Hint!

If the automat is swivelled up very high, the effect of the gas-pressurized spring braking the swivelling down is low at first. Therefore keep hold of the automat when you swivel it down.

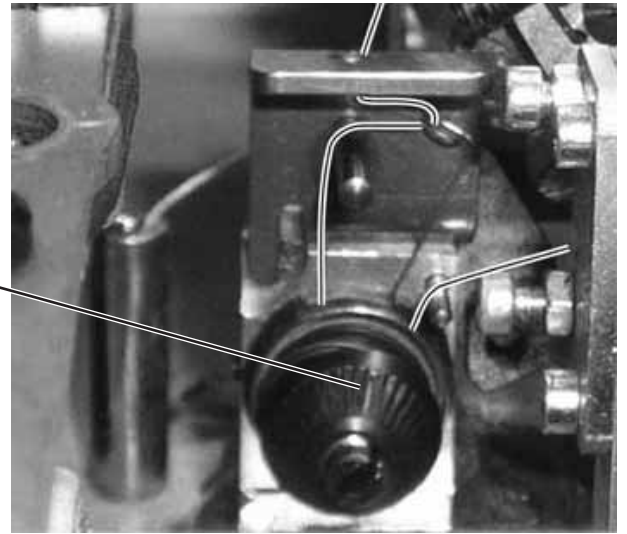
Operating the automat when it is swivelled up can lead to injuries and damage.

5. Thread tension

5.1 Needle thread and looper thread tension



1



The thread tensions are dependent on the type and quality of the threads and fabrics. The buttonhole looks best if it is sewn with the lowest possible thread tension. Too tight thread tensions can lead to undesired ruffling and thread breakage, particularly when processing thin materials.

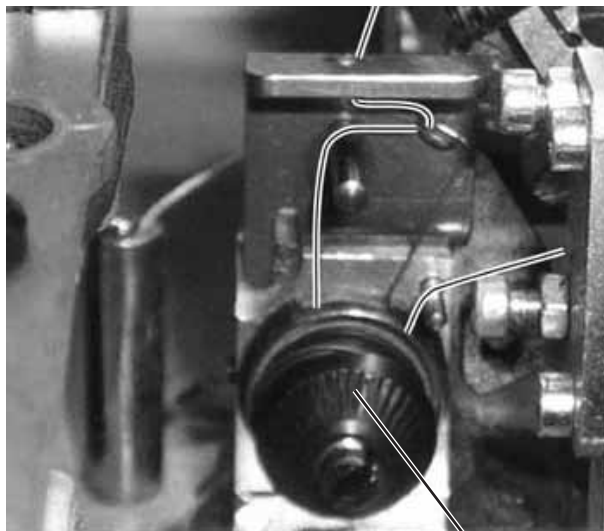
1

Upper thread tension

In general the upper thread tension has to be tighter than the looper thread tension. The upper thread tension is designed as an electronic tension. It consists of the main tension for the sewing process and a remaining tension (cutting tension) for tightening the upper thread during the cutting operation under the throat plate.

Depending on the elasticity of the upper thread used, the remaining tension (cutting tension) has to be adjusted in such a way that the upper thread end hanging out of the needle is long enough to ensure a safe sewing start.

- Adjust the main tension for the sewing operation via the control panel (see chapter 10.3.3 Adjusting the thread tension in the main level).
- Adjust the remaining tension (cutting tension) via the control panel (menu item **130**).



1

Looper thread tension

- Swivel the machine head up.
- Adjust the looper thread tension by means of tension 1.
Turn the tension in clockwise direction in order to increase the looper thread tension.
Turn the tension counter-clockwise in order to reduce the looper thread tension.
- Swivel the machine head down.



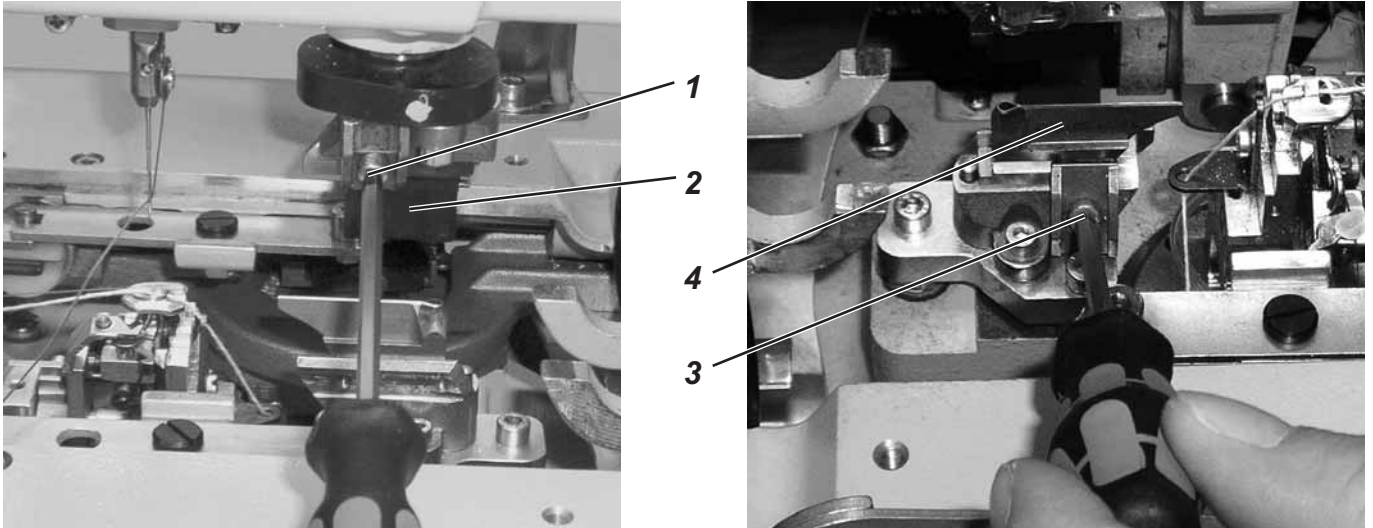
Caution: Danger of injury !

The looper thread tension must only be adjusted when the machine is switched off or in the “Threading mode” (see chapter “Threading mode”).

Hint

The length of the starting thread can be adjusted by changing the thread tension at the start.

6. Changing of cutting blocks and knives



The cutting length can be altered by changing the cutting blocks.



Caution: Danger of injury !

Change the cutting block or the knife only when the automatic buttonholer is switched off!

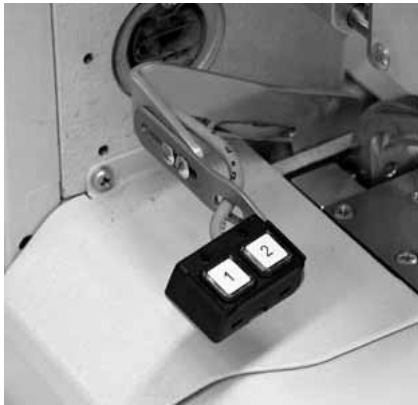
Change the cutting block

- Loosen the Allen screw 1 (Allen key in the accessories).
- Pull the cutting block 2 to the front and remove it.
- Insert new cutting block and push it as far as it will go.
- Tighten the Allen screw 1 again.

Change the knife

- Loosen the Allen screw 3 (Allen key in the accessories).
- Pull the knife 4 to the front and remove it.
- Insert new knife and push it as far as it will go.
- Tighten the Allen screw 3 again.

7. Push button



By means of the push button it is possible to control the clamps and to start the sewing operation. According to the adjustment in the service menu (see service instructions) the function is different.

1. Adjustment

- Key 1: The clamps are opened or closed respectively.
- Key 2: The sewing operation starts when the clamps are closed.

2. Adjustment

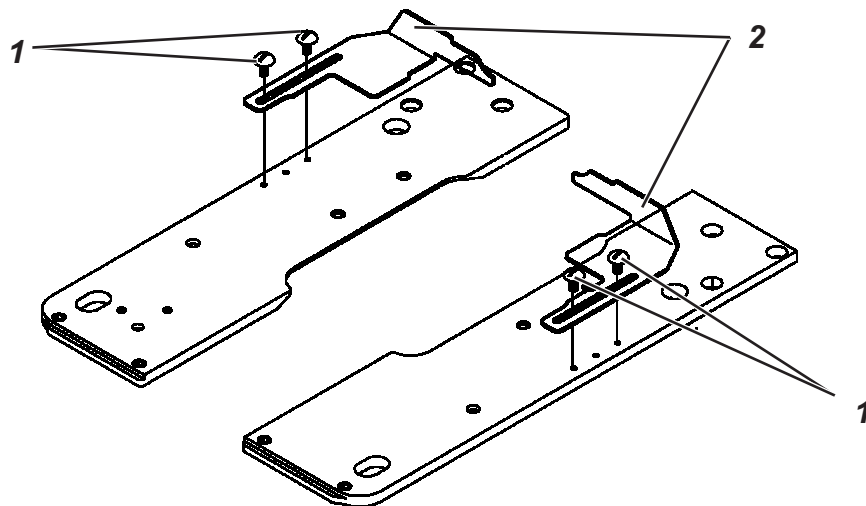
- Key 1: The clamps are opened or closed respectively.
- Key 2: If the clamps are not lowered, they will be lowered now. The sewing operation starts.

8. Setting the cloth stops



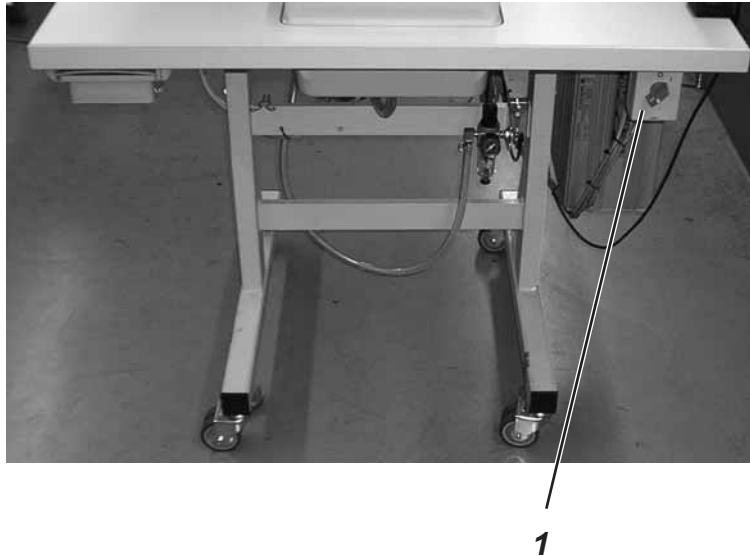
Caution: Danger of injury !

Adjust the cloth stops only when the automatic buttonholer is switched off!



- Place the sewing material until it touches the cloth stops 2 on both sides (right and left).
- Loosen the screws 1 on the right and left.
- Adjust the sewing position by moving the cloth stops 2.
- Tighten the screws 1 again.

9. Switching on - Switching off - Threading mode



9.1 Switching on

- Switch the main switch 1 on.
The machine moves to the loading position and is ready for sewing.

1

9.2 Switching off

- Switch the main switch 1 off.
All drives and the control are immediately separated from the electric supply lines.



Attention!

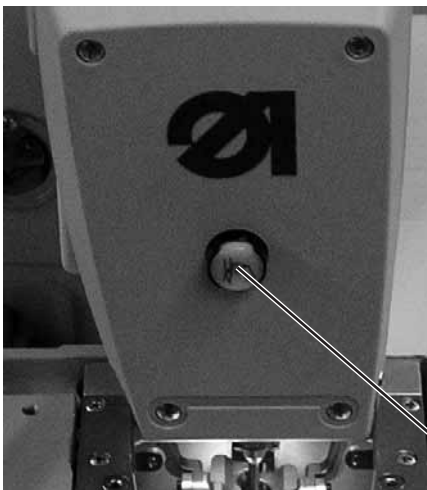
The main switch is also the emergency stop button! When the main switch is turned off, the machine is separated from the power supply!

9.3 Threading mode



Attention!

The “threading mode” must only be used for the operations necessary for threading the needle thread, the looper thread and the gimp thread! For all further operations (e.g. change of knife or cutting block) the machine has to be switched off with the main switch!



Switching on the “Threading mode”

- Press key 2 in the front plate. The key must snap in!
The sewing automat is in the “Threading mode”.
The key is shining in the “Threading mode”.
The fabric support plate moves to the best position for threading.
The fabric clamps remain in the same position as they were when switching on the “Threading mode”.
The sewing drive is separated from the mains.
The knife for cutting open is switched off.

Switching off the “Threading mode”

- Press key 2 again. The key must be released.
After a short stop the sewing automat is ready for sewing again. The sewing operation is continued where the “Threading mode” had been activated.

10. Control

LED display

Keyboard



10.1 General notes

The automatic buttonholer class 559 is equipped with a programmable control. Up to 5 different buttonholes can be defined. It is possible to change between the programmed buttonholes when sewing.

There are two buttonhole types to choose from:

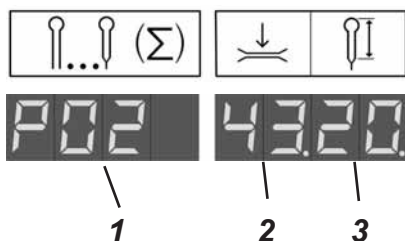
- Buttonholes without bartack
- Buttonholes with taper tack
- Buttonholes with cross tack
- Buttonholes with round tack
- Eyelets (depending on the sewing equipment)

For all buttonhole types the respective characteristics, as e.g. buttonhole length and shape of the eyelet, can be adjusted (see chapter “Altering the buttonhole program”).

10.2 Index of the control panel keys

On the control panel	Designation of the keys in this instruction manual
	“ESC”-key
	“P”-key
	“F”-key
	“OK”-key
	Key ⇐
	Key ⇒
	Key ↑
	Key ↓

10.3 Main level of the menu system



After the automat has been switched on and while sewing the display of the automat indicates the main level of the menu system. In the main level three values are indicated:

- The buttonhole program 1 (in the example **P02**)
- The needle thread tension 2 (in the example **43**)
- The cutting length 3 (in the example **20**)

In the main level there are the following options:

- Direct editing of the values in the main level ("F"-key)
- Buttonhole programming ("P"-key)
- Sewing start (control panel, push button, pedal)

10.3.1 Direct editing of the values in the main level

The values of the main level can directly be altered as follows:

"F"-key	Press the "F"-key in order to edit the values of the main level. A value of the main level is blinking.
Keys ⇐⇒	Change over to the value you want to alter with the keys ⇐⇒. The selected value is blinking.
Keys ↑↓	Change the selected value with the keys ↑↓. With the key ↑ you increase the value, with the key ↓ you reduce it. If you have altered a value, you can no longer change over to another value with the keys ⇐⇒.
"OK"-key	Take over the set value with the "OK"-key. You quit the editing mode. The values of the main level are indicated.
"ESC"-key	Cancel the alteration with the "ESC"-key. The altered value is not taken over. You quit the editing mode. The values of the main level are indicated.

1

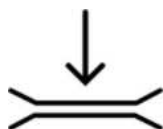
10.3.2 Selecting the buttonhole program

In the main level you can directly select a buttonhole programmed before:



"F"-key	Press the "F"-key. A value is blinking in the display.
Keys ⇐⇒	Select the left field with the keys ⇐⇒. The buttonhole program (P01 to P05) is blinking.
Keys ↑↓	Select the desired buttonhole program with the keys ↑↓.
"ESC"-key	Press the "ESC"-key in order to cancel alterations.
"OK"-key	Press the "OK"-key for confirmation.

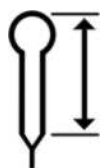
10.3.3 Adjusting the thread tension in the main level



In the right field of the display the first two digits indicate the needle thread tension when sewing. This can be adjusted directly from the main level.

- "F"-key** Press the **"F"**-key. A value is blinking in the display.
- Keys ⇐⇒** Select the first two digits of the right field of the display with the keys ⇐⇒ . The value of the needle thread tension is blinking.
- Keys ↑↓** Adjust the desired value with the keys ↑↓ .
- "ESC"-key** Press the **"ESC"**-key for cancelling alterations.
- "OK"-key** Press the **"OK"**-key for confirmation.

10.3.4 Adjusting the cutting length in the main level



In the right field of the display the last two digits indicate the cutting length. This can be adjusted directly from the main level.

- "F"-key** Press the **"F"**-key. A value is blinking in the display.
- Keys ⇐⇒** Select the last two digits of the right field with the keys ⇐⇒ . The value of the cutting length is blinking.
- Keys ↑↓** Adjust the desired value with the keys ↑↓ .
- "ESC"-key** Press the **"ESC"**-key for cancelling alterations.
- "OK"-key** Press the **"OK"**-key for confirmation.

10.3.5 The counter

You can have the daily count number of pieces indicated or set it back to 0 manually. If the daily number of pieces exceeds the maximum value of 9999, it is set back automatically and starts counting with 0 again.



- 2 x "F"-key** Press the **"F"**-key in order to edit the values of the main level. Press the **"F"**-key anew and the display changes over from the buttonhole program to the counter of the daily number of pieces.
- "ESC"-key** Press the **"ESC"**-key for quitting the counter of the daily number of pieces. The main level is indicated again.

Setting the counter of the daily number of pieces back:

- "OK"-key** When the daily number of pieces is indicated, hold the **"OK"**-key pressed for *several seconds*. The counter is set to 0 and the display changes over to the main level again.

10.4 Operating the menu

The menu system of the 559-151000 is subdivided in 3 levels. The main level indicates the used buttonhole program, the needle thread tension and the cutting length while sewing. You can change over from the main level to the menu for programming buttonholes. A menu item can include further submenu items.

10.4.1 Selection of a menu item



Menu item without submenu



Menu item with submenus



Submenu item

“P”-key

Press the “P”-key for changing over from the main level to the menu system. A menu item is indicated.

If the menu item has no submenus you see a value, which you can alter, in the right field of the display.

If the menu item has submenus, you see three items in the right field of the display. The values of this menu item are adjusted in the submenus.

Keys $\uparrow \downarrow$

Select the desired menu item with the keys $\uparrow \downarrow$.

“OK”-key

Press the “OK”-key to confirm the value of the selected menu item.

If the selected menu item includes *submenus* a menu item of the selected submenu is indicated when pressing the “OK”-key. Select the desired submenu item also with the keys $\uparrow \downarrow$ and confirm with the “OK”-key. Now you can alter the value.

Key $\Leftarrow$

With the key $\Leftarrow$ you return to the next menu level above, from the submenu level to the menu level, from the menu level to the main level.

“ESC”-key

With the “ESC”-key you always return directly to the main level.

1

10.4.2 Editing of a value

Keys $\Leftarrow \Rightarrow$

With the keys $\Leftarrow \Rightarrow$ you select the digit of the value you want to alter.

The values can only be altered in certain steps. The sewing speed for example can only be altered in steps of 1000 or 100, i.e. the digits 10 and 1 cannot be selected.

Keys $\uparrow \downarrow$

With the key $\uparrow$ the value of the selected digit is increased.

With the key $\downarrow$ the value of the selected digit is reduced.

All values have got minimum and maximum values which cannot be exceeded or fallen below.

“OK”-key

With the “OK”-key you take over the altered values. You return to the menu selection.

“ESC”-key

With the “ESC”-key you abort the value alteration. The previous value is reproduced again. You return to the menu selection.

10.4.3 List of menu and submenu items

Menu item	Description																												
100 	Buttonhole number: up to 5 different buttonholes can be programmed.																												
110 	Taper tack selection: buttonholes with taper tack (1), cross tack (2), round tack (3), and without taper tack (0) can be programmed.																												
120 	Length adjustments																												
121 	Sewing length: the sewing length can be set from 6 to 42 mm, depending on the equipment.																												
121 	Eyelet diameter: the internal diameter of the eyelet, depending on the equipment adjustable between 2-7.5 mm.																												
122 	Stitch length in the lip: distance from stitch to stitch within the lip (from 0.5 to 2 mm).																												
122 	Number of stitches in the eyelet*: number of the uniformly divided stitches in the entire eyelet.																												
123 	Thread trimming length: it is possible to alter the length of the needle thread on the underside of the buttonhole.																												
	Condensed stitches increase the sewing security at the seam beginning and seam end.																												
124 	Length of the condensed stitches at the seam beginning: distance between the stitches within the stitch condensation at the seam beginning.																												
125 	Length of the condensed stitches at the seam end: distance between the stitches within the stitch condensation at the seam beginning.																												
126 	Number of condensed stitches at the seam beginning: stitch number inside the stitch condensation at the seam beginning.																												
127 	Number of condensed stitches at the seam end: stitch number inside the stitch condensation at the seam end.																												
128 	Eyelet overlap*: overlapping of the seam beginning and the seam end.																												
130 	Needle thread tension																												
131 	Sewing tension: sewing tension electronically regulated within the sewing cycle.																												
132 	Trimming tension: lowered needle thread tension for the needle thread trimmer																												
133 	Tension at the sewing start: the length of the starting thread can be adjusted by changing the thread tension at the seam beginning.																												
140	Eyelet adjustments																												
141 	Eyelet type: up to 6 different eyelet types can be programmed.																												
	<table><tr><th>No.</th><th>Knife Shape (X x Y)</th><th>Buttonhole shape for cut after sewing/ no cut (X x Y)</th><th>Buttonhole shape for cut before sewing (X x Y)</th></tr><tr><td>0</td><td>0,0x0,0</td><td>0,0x0,0</td><td>0,0x0,0</td></tr><tr><td>1</td><td>1,3x3,0</td><td>1,6x3,5</td><td>1,1x2,6</td></tr><tr><td>2</td><td>2,1x3,2</td><td>2,4x3,9</td><td>1,7x2,8</td></tr><tr><td>3</td><td>2,8x4,3</td><td>3,3x4,6</td><td>2,4x3,9</td></tr><tr><td>4</td><td>3,0x4,6</td><td>3,6x4,8</td><td>2,6x4,1</td></tr><tr><td>5</td><td>3,2x5,4</td><td>3,6x6,1</td><td>2,8x4,7</td></tr></table>	No.	Knife Shape (X x Y)	Buttonhole shape for cut after sewing/ no cut (X x Y)	Buttonhole shape for cut before sewing (X x Y)	0	0,0x0,0	0,0x0,0	0,0x0,0	1	1,3x3,0	1,6x3,5	1,1x2,6	2	2,1x3,2	2,4x3,9	1,7x2,8	3	2,8x4,3	3,3x4,6	2,4x3,9	4	3,0x4,6	3,6x4,8	2,6x4,1	5	3,2x5,4	3,6x6,1	2,8x4,7
No.	Knife Shape (X x Y)	Buttonhole shape for cut after sewing/ no cut (X x Y)	Buttonhole shape for cut before sewing (X x Y)																										
0	0,0x0,0	0,0x0,0	0,0x0,0																										
1	1,3x3,0	1,6x3,5	1,1x2,6																										
2	2,1x3,2	2,4x3,9	1,7x2,8																										
3	2,8x4,3	3,3x4,6	2,4x3,9																										
4	3,0x4,6	3,6x4,8	2,6x4,1																										
5	3,2x5,4	3,6x6,1	2,8x4,7																										
142 	Number of stitches in the eyelet: from 4 to 25 stitches can be set in the circle of the buttonhole eye.																												

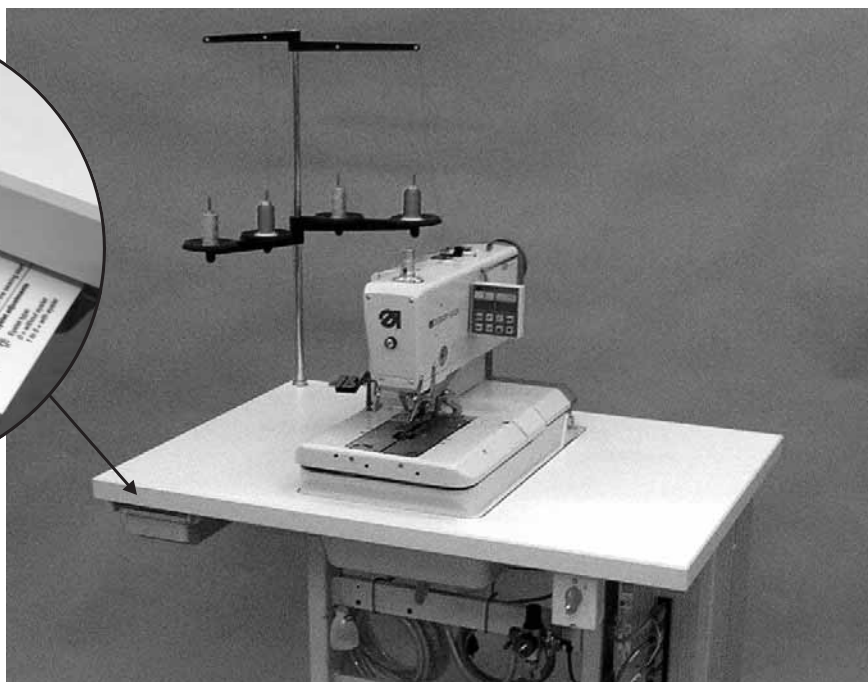
* only for eyelets

Menu item	Description
190	Round tack adjustments
191 	Number of stitches in the round tack: from 6 to 12 stitches can be set in the round tack.
192 	Throw width in the round tack: the mechanically regulated throw width (stitch width) can be enlarged/reduced. Attention! The enlargement depends on the setting of the throw width in menu item 150.
193 	Seam end position (1 = in the tack, 2 = within the lip)
194 	Overlapping in the round tack: overlapping of the seam beginning and the seam end.
195 	Seam beginning within the lip (0% = eye)
200	 Speed: sewing speed (stitches per minute)



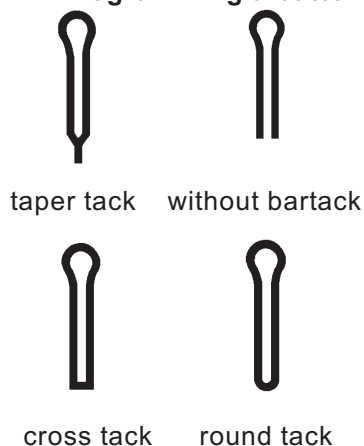
Hint!

In order to give you a better overview of all the submenus and to facilitate the programming, a quick-reference is accompanying the manual. You can store it above the drawer.



1

10.4.4 Programming a buttonhole



- Press the “P”-key to get from the main level to the buttonhole programming mode.
 - Select menu item **100** with the keys $\uparrow\downarrow$. Press the “OK”-key for activating the menu item. Select the buttonhole (**P01** to **P05**) you want to alter and confirm with the “OK”-key.
 - Select menu item **110** with the keys $\uparrow\downarrow$. Press the “OK”-key for activating the menu item. Select the bartack type of the chosen buttonhole.
 - Select “0” for a **buttonhole without bartack**.
 - Select “1” for a **buttonhole with taper tack**.
 - Select “2” for a **buttonhole with cross tack**.
 - Select “3” for a **buttonhole with round tack**.
 - Select “4” for an **eyelet**.
- Confirm with the “OK”-key.



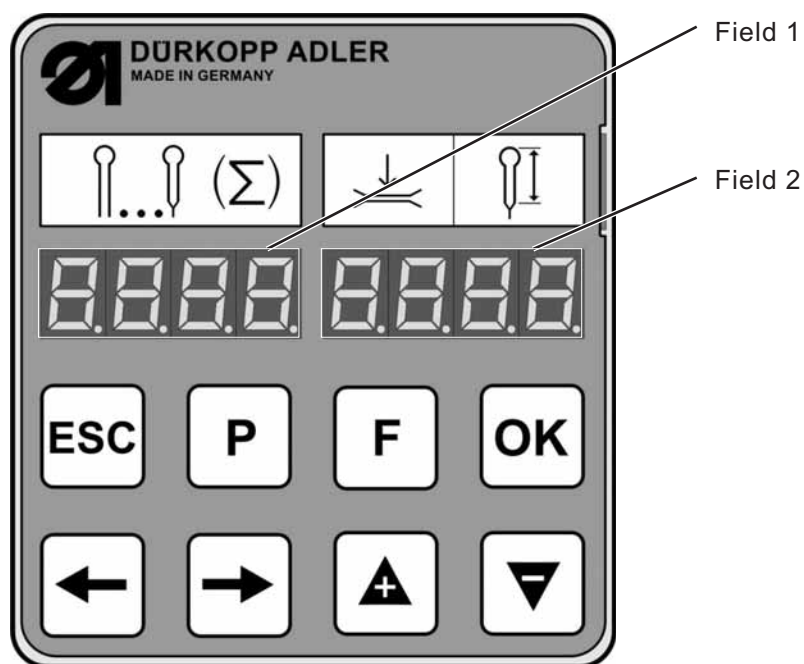
Hint!

When you alter the bartack type of a buttonhole program, all values of this buttonhole are set back to the standard value! Therefore always choose the bartack type before adjusting the other values of the buttonhole!

- Now adapt the other parameters (**120** to **200**) according to your requirements (operation of the menu see **chapter 10.4.1** to **10.4.3**)

10.5 Sewing operation

10.5.1 Switching on



- Switch on main switch.
The machine moves to the loading position. The main level is indicated in the display.
- Field 1: used buttonhole program
- Field 2: The first two digits indicate the thread tension.
The last two digits indicate the cutting length of the buttonhole or the internal diameter of the eyelet in mm.

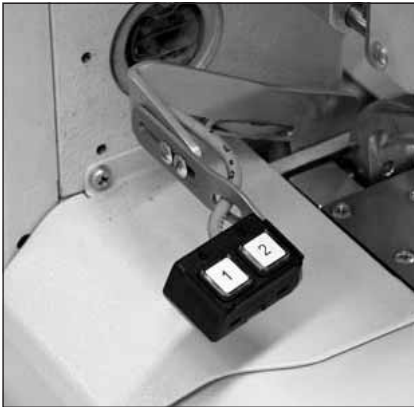
10.5.2 Selection of a buttonhole program

- Press the “F”-key.
- Go to field 1 with the keys $\leftarrow \rightarrow$. The buttonhole program is blinking (e.g. **P02**).
- Select the desired buttonhole program (**P01** to **P05**) with the keys $\uparrow \downarrow$.
- Confirm by pressing the “OK”-key.

You can also select the buttonhole program via menu item **100** alternatively.

10.6 Sewing

The sewing operation can be controlled either by push button or with the keys "OK" and "ESC" at the control panel.



Sewing with the push button

With the push button the clamps can be controlled and the sewing operation started. According to the adjustment in the service menu (see service instructions) the function is different.

1. Adjustment (Standard)

- Key 1: The clamps are opened or closed respectively.
- Key 2: The sewing operation starts when the clamps are closed.

2. Adjustment

- Key 1: The clamps are opened or closed respectively.
- Key 2: If the clamps are not lowered, they will be lowered now. The sewing operations starts.

Quick stop while sewing

- Press key 1 or 2. The sewing operation stops.
- Press key 1 for aborting the sewing operation.
- Press key 2 for continuing the sewing operation.

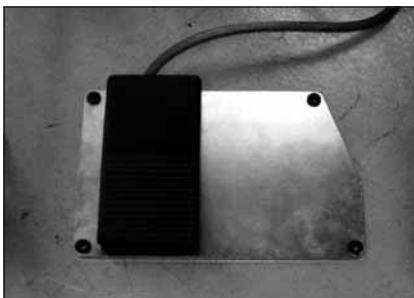


Sewing with the keys at the control panel

- Load the fabric.
 - Press key "OK" once. The clamps close.
 - If you wish to open the clamps again, press key "ESC".
 - When the sewing operation is to be started, actuate key "OK" anew. The buttonhole is sewn.
- After the sewing operation the automat moves to the loading position again.

Quick stop while sewing

- Press the "OK"-key or the "ESC"-key. The sewing operation stops.
- Press the "ESC"-key for aborting the sewing operation.
- Press the "OK"-key for continuing the sewing operation.



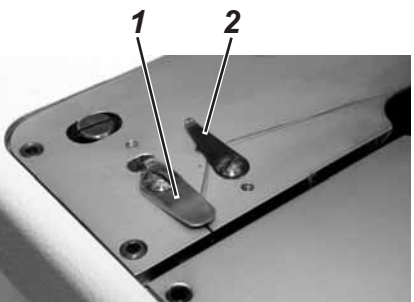
Sewing with pedal (optional equipment)

The pedal is a two-step pedal without backpedal function.

- When pedalling the first step the clamps are closed. The clamps open again when the first step is released.
- When pedalling the second step the sewing operation starts. The pedal can be released as soon as the sewing operation has started.

Quick stop while sewing

- Step on the pedal. The sewing operation stops.
- Step on the pedal once again for aborting the sewing operation.
- The sewing cannot be continued with the pedal! For continuing the sewing operation you have to use the control panel or the push button.



Taking off the finished workpiece

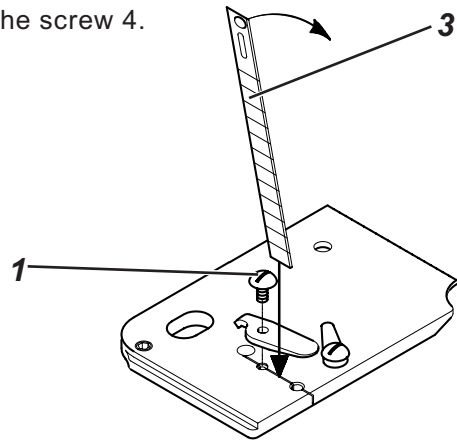
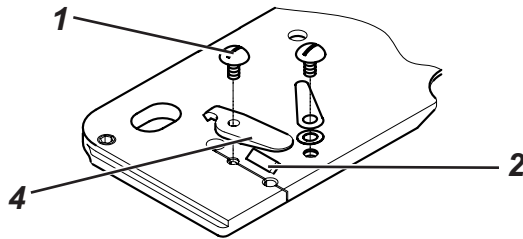
- In order to take off the finished workpiece, draw the bottom thread and the gimp under the thread clamp 2. Pull both threads along the knife 1 from the right to the left. The threads are cut.

Replacing the knife

- Loosen screw 1 and remove the fabric holder 4.
- Take out the old knife 2.
- Stick the new knife 3 in the groove and snap it off in the arrow direction.
- Tighten the screw 1.
- Fix the fabric holder using the screw 4.

Hint!

The knife may not exceed the fabric holder.



11. Information messages

11.1 Needle not in basic position

If the needle is not in its basic position at the sewing start, the information code in the margin appears.



Correction

Turn the handwheel until the info disappears. (See chapter 8.3)

11.2 Pressure monitor

The pressure monitor supervises the pressure of the air inlet. If no compressed air is available or the pressure is too low, the information code in the margin appears in the display.



Correction

- Switch the sewing automat off.
- Provide sufficient compressed air.
- Switch the sewing automat on.

11.3 Thread breakage

Should the thread breaks during the sewing operation, the information code in the margin appears in the display.



Correction

- Press the button at the head cover to get into the “threading mode”.
- Thread in the thread new.

11.4 Threading mode



As long as the sewing automate is in the “Threading mode”, the information code in the margin appears.



The sewing automat is in the “Threading mode”, the needle is not in its upper position.

Correction

- Switch off the “Threading mode” by pressing the button at the head cover. The needle moves to its upper position.
- Switch on the “Threading mode” again.



If the key for the “Threading mode” at the head plate of the automat is pushed in before switching on, the information code below is indicated. The same info appears when the key “Threading mode” is pressed while sewing.

Correction

- Switch the automat off.
- Release the “Threading mode” key.
- Switch the automat on again.

12. Error messages



see Error messages in the Service Instructions

13. Maintenance



Caution: Danger of injury !

Carry out maintenance work only when the machine is switched off.

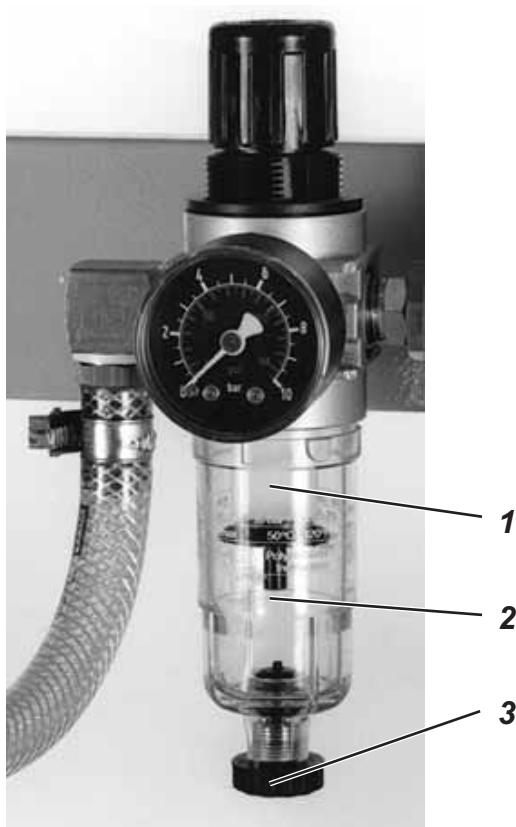
In case maintenance work has to be done when the machine is running, practise utmost caution.

13.1 Cleaning

A clean sewing automat avoids disturbances !

Daily cleaning:

- Clean the zone around looper, thread trimmer and throat plate as well as the sewing head daily from sewing dust, thread tails and cutting waste.
If a vacuum cleaner is available, vacuum up the waste.
- Empty the waste container, if required.



- Check the water level in the pressure regulator daily.
The water level must not rise up to the filter insert 2.
Let the water run out of the water separator 1 under pressure after screwing in the drain screw 3.

13.2 Oiling



Check the oil level in the oil reservoirs 4 and 5 weekly !



Caution: Danger of injury !

Oil can cause skin eruption!
Avoid a longer contact with the skin!
Wash yourself thoroughly after a contact!



ATTENTION !

The handling and disposal of mineral oils is subject to legal regulations.

Deliver used oil to an authorized collecting station!
Protect your environment. Take care not to spill oil!

Fill up the oil reservoirs exclusively with lubricating oil **DA-10** or an equivalent oil with the following specification:

- Viscosity at 40°C: 10 mm²/s
- Ignition point: 150°C

The oil can be bought at the sales points of **DÜRKOPP ADLER AG** under the following parts numbers:

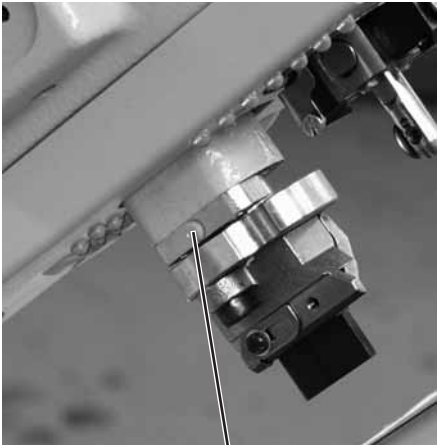
250 ml Container:	9047 000011
1 l Container:	9047 000012
2 l Container:	9047 000013
5 l Container:	9047 000014

General notes

All the machine's moving parts are lubricated by two oil reservoirs via an oil-wick system.

Check and fill up the oil reservoirs, from time to time it is necessary to oil the felts 2 and the clamp arms 3 of the punch 1.

13.3 Control



1



6



3

2



Caution: Danger of Injury !

Turn the main switch off.
The maintenance of the automatic buttonholer must only be carried out with the machine switched off!



ATTENTION !

If the automatic buttonholer has not been used for a long time or after assembling the machine, oil the wicks, felts, looper and needle bar components (see Installation Instructions chapter 10).

Maintenance work to be done	Operating hours			
	8	40	160	500
Automatic buttonholer				
Clean the area under the needle plate of sewing dust	X			
Check the oil level	X			
Check and clean the toothed belts			X	
Oil the punch 1			X	
Oil the clamp arms 3 and the felts 2			X	
Oil the felt 6 on the cam disc			X	
Pneumatic system				
Check the water level in the pressure regulator	X			
Clean the filter insert in the maintenance unit	X			
Check the system for leaks			X	